AMENDMENTS TO THE SPECIFICATION:

Please replace the paragraph beginning on page 1, line 5 with the following amended paragraph.

In many welding applications, a power source is in a fixed location and provides arc power through an electrode cable to a remotely located wire feeder having a spool of welding wire driven by a pair of feed rolls through an elongated tube out a welding torch to the welding operation. Current is directed through the electrode cable to the remotely located wire feeder that is movable from position to position for accommodating welding at different locations. The power on the electrode cable drives the motor that rotates feed rolls for pulling wire from the spool and forcing it through the gun or torch. A trigger on the gun or torch closes a switch to initiate the welding operation and start the drive motor for feeding wire. In accordance with this technology, the electrode cable is provided with power so operation of the trigger closes a mechanical contact within the wire feeder to direct welding current to the torch where it is connected to a contact around the advancing wire. Such remote wire feeders are sold by The Lincoln Electric Company as model No. LN-25 and LN-15. Each of these units has an internal contactor that is closed when the welding operation is to be started. The trigger also causes the motor to drive the feed rolls for advancing the welding wire from the storage spool. This type of remote feeder is beneficial for certain welding, especially in shipyards. However, the internal mechanical contactor in the arc powered feeder is prone to failure caused by arc damage to the contacts due to repeated switching of high inductance DC current. Indeed, the mechanical contactor of the feeder is subject to damage from welding currents which often exceed the ~~contactors~~ contactor's current ratings. It has been found that in some installations, the mechanical contactors do not accommodate repeated use of extremely high welding currents. The wire feeder can not perform short, repetitive welds such as stitch welding or spot welding because of the accumulated heating of the contactor and the mechanical effect of repeated arcing of the contacts in the mechanical contactor. Each time the trigger is pulled, a current surge is created from the electrode cable to the gun. These remote wire feeders have difficulty in changing voltage. The current is controlled by the wire feed speed, however the voltage is separately adjustable. This adjustment must be made at the power source which is often a long distance from the actual welding operation. These units

have a single cable between the power source and the wire feeder since coaxial cables and other dual cable designs are extremely expensive. Such deficiencies of existing arc powered wire feeders are overcome by the present invention.

Please replace the paragraph beginning on page 8, line 3 with the following amended paragraph.

The invention involves a remotely located wire feeder F of the type including an internal spool 30 for electric arc welding wire W. The wire is pulled from spool 30 and pushed through gun or torch 32 to a contact sleeve 34. Electric power is directed to electrode E, which is wire W, for performing an electric arc welding process between the electrode and workpiece WP. Standard ground 36 is connected to the wire feeder through ground clamp 40. Input cable 50 has a length 52 and connects terminal 14 to power lead 54 within feeder F so power is directed to contact sleeve 34 for the welding process when switch 22 of the power supply is closed. In the prior art, a mechanical contact is used in feeder F to direct power from power source 10 to contact sleeve 34. The power supply is on and the welding operation is determined by the closing of the contact in the wire feeder when trigger 100 is closed. Power supply 10 is off until the welding process is to be performed. Remote wire feeder F has cabinet 60 with lower casters 62, 64 so that the wire feeder is easily movable into various locations allowed by the length 52 of cable 50. A welding operation at various locations can be performed effectively. This type of welder is used where the welding operation is not fixed and varies, such as in a shipyard where a plurality of power sources are available for wire feeder F. In FIGURE 1, power source 10 is known to be connected to wire feeder F. The aspect of the invention in FIGURES 2-8 makes the association. In some instances, cabinet 60 does not include wheels or casters 62, 64, but is merely pulled along by an appropriate handle from one location to another. In accordance with standard technology, feeder F includes a feed roll 70, 72 driven by motor M through shaft 74. Speed is controlled by microprocessor or other controller 80 that receives power from cable 50 through input 82. Output 84 has a voltage to determine the desired speed of motor M for the proper wire feed speed (WFS) of wire W. The speed is used to control arc current. The feed speed is determined by the speed of motor M and is adjusted manually by speed control 90 having an output 92 for controlling the operation

of microprocessor controller 80. Movable trigger 100, associated with gun or torch 32, is depressed to close start switch 102 for starting the welding process between electrode E and workpiece WP. The start condition of switch 102 is sensed by circuit 110 having an output 112 which is digital and coded by an appropriate device 114. Consequently, switch 102 is closed to start a welding process. Sensor 110 creates a coded signal on line 112 indicating that trigger 100 has been closed. In accordance with an aspect of the invention, a voltage knob 120 is set to the desired arc voltage between electrode E and workpiece WP. The position of knob 120 determines the signal on output 122 which is also directed to sensor 110. The output of the voltage control or set knob 120 gives a signal in line 112 which is also modulated by device 114. Thus, a signal in line 112 from sensor 110 indicates when the weld cycle is started by trigger 100 and the desired arc voltage set by knob 120. This coded information is directed to the transceiver 130 that transmits a signal 132, which is an RF electromagnetic signal indicating that the welding process has commenced. In the preferred embodiment signal 132 is a coded signal unique to the power source, so the power source [[A]] 10 connected to wire feeder F is the one communicated by signal 132. In the embodiment using voltage knob 120, the desired voltage for the welding operation is also transmitted to power source 10. These signals are communicated through the air with receiver 140 on power source 10. The output of the receiver is passed through a decoder 142 for transmitting a set point signal to voltage control 20 and the start signal to switch 22. By merely depressing trigger 100 the welding cycle is started by power source 10. A set voltage is applied to line 54. When trigger 100 is released, switch 102 is opened and a signal on line 112 is transmitted by transceiver 130 to turn off power source 10. In this manner, wire feeder F has no mechanical contactor as used in the prior art when a single cable connects a power source with a wire feeder movable into various remote locations. Thus, the disadvantage of a mechanical contactor in such wire feeder is eliminated.

Please replace the paragraph beginning on page 11, line 20 with the following amended paragraph.

Transformer 210 has a secondary 212 to create a power supply 214 for transceiver 140 through leads 216,218. In a like manner, transformer 210 has a secondary 220 for

creating a low voltage power supply 222 for driving both the identification signal generator 224 and power supply 222.

Please replace the paragraph beginning on page 12, line 21 with the following amended paragraph.

In FIGURE 3, details of the preferred embodiment are illustrated wherein transceiver 140 actually uses receiver 240 to receive uniquely coded signal 132 from the wire feeder connected to the power source. The transmitter stage 242 is used in practice; however, information is generally not transmitted back to the wire feeder, although this could be done on the basis of the same unique code. Transceiver 140 has an output stage or wireless controls 244 that communicate commands to a parameter circuit, such as voltage control circuit 20, or a condition command to control a condition, such as on and off control circuit 22. This has been explained in connection with FIGURE 1. The identification code generator 224 creates a low voltage digital signal 250 represented in FIGURE 7. An output transistor 252 controls the logic signal on power leads 50(N) by line 258 at the anode of diode 259 and line 256. The emitter of transistor 252 is connected to common ground 24 by line 254. A plurality of pin switches are used as a select device 260 to select the particular or unique code transmitted by generator 224 on power lead 50(N). At the same time device 260 sets the same code in receiver 240 as indicated by line 260a. Thus, by adjusting the selector device, power source 10, identified as source N, is programmed or set to a desired unique code. This code is transmitted to a wire feeder. When lead 50(N) is connected to a wire feeder, the wire feeder identifies the particular power source from which it is receiving its input power. This is used in connection with the system illustrated in FIGURE 1. A common unique code exists in both the wire feeder and the connected power source N.

Please replace the paragraph beginning on page 13, line 18 with the following amended paragraph.

In FIGURE 4, wire feeder F receives power from leads [[50N]] 50(N). This drives the power bridge 230 and directs the coded information to identification detector 232. Bridge 232 includes input digital coded information on line 270 and has an output 274 on which

the code in the form of a signal is received from the center tap of divider 276. The coded signal in line 274 is directed to the identification detection and comparator 280 to set the code for wire feeder F in accordance with the code received on line [[50N]] 50(N) from the connected power source N. The set code is used in the transmitter section 282 of transceiver 130 to produce coded signal 132 for controlling a parameter and/or a condition of the associated connected power source N. Transceiver 130 also has a receiving stage 284 which is not used in practice, but which could be used for receiving coded information from power source N connected to the wire feeder. By using the circuit shown in FIGURE 4 the identification of the power source described in FIGURE 2 is implemented in practice.

Please replace the paragraph beginning on page 14, line 8 with the following amended paragraph.

In FIGURE 4, the feeder power bridge rectifier provides power to the feeder and load isolation from digital signals for either electrode polarity. The identification detector bridge rectifier provides proper polarization of the signal for either electrode polarity. Wireless controls 286 transmit output control information to the power source using the radiofrequency (RF) data encoded with the unique identification number or code received from the power source. Once the unique identification number or code is established, the wire feeder can receive encoded radiofrequency data from the power source, as well, although this is not now used in practice.

Please replace the paragraph beginning on page 14, line 15 with the following amended paragraph.

Implementation of the present invention is schematically illustrated in FIGURE 5. A plurality of power sources, such as power source X, power source Y, power source Z, have output leads 302, 304 and 306, respectively. Of course, many more power sources are used in a particular welding network. Leads 302, 304 and 306 are commingled as represented by box 310. The leads are grouped as output leads 312, 314 and 316. There is no way to determine which power source lead is connected to one of the stinger leads 312, 314 and 316. [[the]] The invention solves this dilemma. The lead 316 connected to power source F has a unique coded signal. This coded signal is identified by the wire

feeder to set the communication code for transceiver 130. The code of signal 132 is set according to the signal on lead 316. Thus, transmitted signal 132 is set to a code recognized by only the correct transceiver 140a, 140b or 140c and the actual power source in the group of power sources X,Y,Z. This same inventive concept is illustrated differently in FIGURE 6. The lead 50 from power source 10 to wire feeder F carries a unique code from transmitter 224. This unique code is received and read by decoder 232 so that the signal 132 between transmitter 130 and receiver 140 is coded to the particular unique code of the power source actually connected to the wire feeder. The unique power source identification code has a variety of implementations. In the illustrated implementation, code 250, shown in FIGURE 7, is a serial digital signal transmitted from a power source. This code is illustrated as being the number 5-2-4. When a wire feeder receives the signal 5-2-4 code, it identifies the code and sets its internal transmitter to transmit signals only to the 5-2-4 power source. This process is functionally disclosed in FIGURE 8. The steps for producing the present invention start with the box 320. This box indicates that the power source transmits a signal with code N. The code N signal is received by the wire feeder and is employed to set the wire feeder to the corresponding code N (box 322). The information on signal 132 transmitted back to the power source (box 324) has a carrier with the code N so that only the power source N receives the command and/or operation data on signal 132. Consequently, only the power source N is responsive to the information from wire feeder F. By using the present invention, a large number of power sources can be used with a number of wire feeders. By merely connecting a power lead to the wire feeder, the wire feeder is set to communicate only with the power source from which it receives its welding power. This identification procedure greatly enhances the invention illustrated in FIGURE 1 wherein the associated wire feeder and power source are connected and communication is by RF or through the power lead so that there is no need for mechanical connectors in the wire feeder itself.